

THOR-LX / HIIIr Assembly

3.1 Description of the THOR-LX / HIIIr Assembly and Features

The THOR-LX / HIIIr unit has been designed for use as a retrofit unit which can be attached directly to the standard Hybrid III 50% male dummy. The mechanical design of the THOR-LX / HIIIr provides several advances over previous lower extremity designs, as described in the introduction chapter.

3.2 Assembly of the THOR-LX / HIIr

3.2.1 Parts List

The part list for the THOR-LX / HIIIr assembly is listed in the drawing package under the Bill of Materials section. All quantities are listed in the Bill of Materials. Refer to drawing T1LXM000 in the THOR-LX / HIIIr drawing set for a detailed mechanical assembly drawing. **Figure 3.1** is a photograph of the exploded lower extremity assembly and hardware.



Figure #3.1 - Exploded View of THOR-LX / HIIIr

3.2.2 Assembly of THOR-LX / HIIr Components

The following procedure is a step-by-step description of the assembly procedure for the THOR-LX / HIIIr components. The numbers provided in () refer to a specific drawing / part number of each particular part. The numbers noted in { } after the bolt size indicate the size of the hex wrench required to perform that step of the assembly. All bolts should be tightened to the torque specifications provided in Section 2.1.3.

1. The Upper Tibia Load Cell (Denton: Model 4353) is connected to the Upper Tibia Tube (T1LLM011) using four 1/4-28 x 1/2" BHSCS {5/32}, as shown in **Figure 3.2**.

NOTE: THE UPPER LOAD CELL X-AXIS MUST BE ORIENTED TOWARD THE FRONT OF THE LOWER EXTREMITY ASSEMBLY AS IT IS PUT TOGETHER.



Figure #3.2 - Upper Tibia Load Cell Connected to Upper Tibia Tube

2. The Upper Tibia Tube is connected to the Upper Flange of the Tibia Compliant Bushing Assembly (T1LLM400) using three 1/4-28 x 1/2" BHSCS {5/32} and one 1/4-28 x 1/2" FHSCS {5/32}, as shown in **Figure 3.3**. The flat head bolt is used in the countersunk hole which is oriented to the rear of the leg assembly (-X axis).



Figure #3.3 - Upper Tibia Tube attached to Compliant Bushing

3. Insert the Compliant Bushing Plunger into the linear bearings within the Lower Tibia Tube (T1LLM010). Rotate the Lower Tibia Tube so that there is a flat mounting surface on the left and right sides, as well as, a flat mounting surface on the front, as shown in **Figure 3.4**. (Note, there should be no flat mounting surfaces on the back - which will receive the flat head bolt in the next step.)



Figure #3.4 - Proper Orientation of the Lower Tibia Tube

4. Secure the Compliant Bushing Assembly to the Lower Tibia Tube using two Plunger Retaining Bolts (T1LLM413) on the Left and Right Sides, one 1/4-28 x 1/2" BHSCS {5/32} in the front and one 1/4-28 x 1/2" FHSCS {5/32} in the rear. This assembly is shown in two views in **Figures 3.5**.

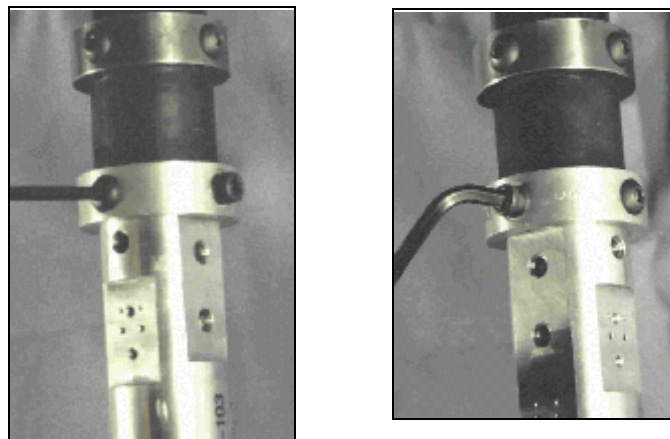


Figure #3.5- Securing the Part # T1LLM413 Compliant Bushing (front) (Left and Right Sides use part # T1LLM413)

5. The Lower Tibia Load Cell (Denton: Model 4929) connected to the bottom of the Lower Tibia Tube using four 1/4-28 x 1/2" BHSCS {5/32}, as shown in **Figure 3.6**.

NOTE: THE LOWER TIBIA LOAD CELL X-AXIS MUST BE ORIENTED TOWARD THE FRONT OF THE LOWER EXTREMITY ASSEMBLY AS IT IS PUT TOGETHER. THE 3/8" RADIUS NOTCH IN THE LOWER FLANGE OF THE LOAD CELL INDICATES THE POSITIVE X AXIS AND IS ORIENTED TOWARD THE FRONT OF THE ASSEMBLY.

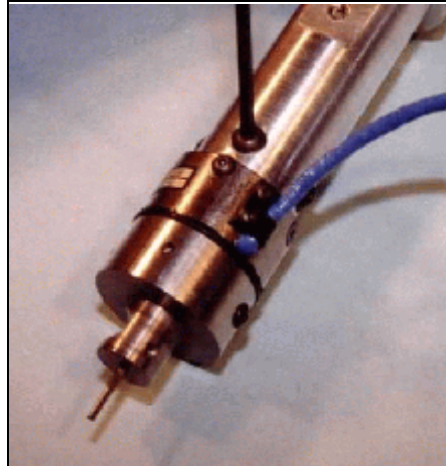


Figure #3.6 - Lower Tibia Load Cell attached to Lower Tibia Tube

6. A uniaxial accelerometer unit can be attached directly to the mounting location provided on the front of the tibia tube to measure the X-axis acceleration. Use two #0-80 x 1/4" SHCS {0.05} to attach the uniaxial accelerometer to the flat mounting area on the front of the Lower Tibia Tube, as shown in **Figure 3.7**.

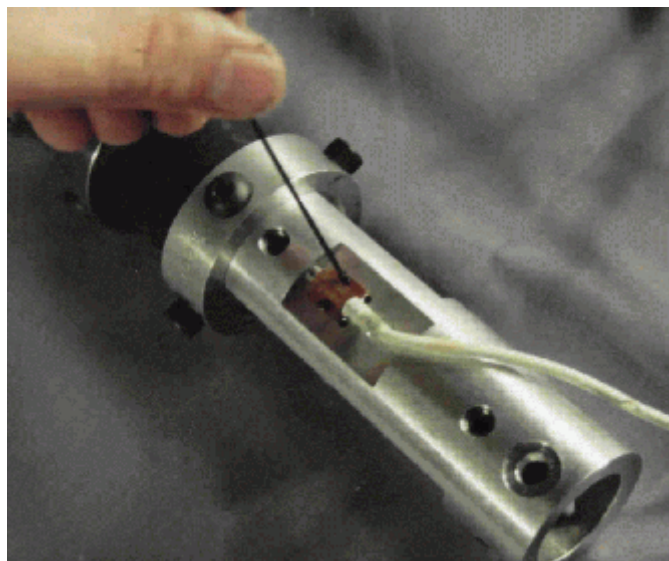


Figure #3.7 - Attaching X Axis Accelerometer to Front